Methodological bases of innovation model formation of the agricultural sector of the national economy

Svitlana Khalatur[1*], *Mykola* Kravchenko[2], *Vitalii* Oleksiuk[3], *Larysa* Brovko[1], and *Oleksandr* Karamushka[4]

[1]Dnipro State Agrarian and Economic University, Banking and Insurance Department, Serhiia Yefremova St, 25, 49000 Dnipro, Ukraine
[2]Dnipro State Agrarian and Economic University, Department of Accounting, Audit and Management of Financial and Economic Security, Serhiia Yefremova St, 25, 49000 Dnipro, Ukraine
[3]Dnipro State Agrarian and Economic University, Economics Department, Serhiia Yefremova St, 25, 49000 Dnipro, Ukraine
[4]Dnipro State Agrarian and Economic University, Information Systems and Technologies Department, Serhiia Yefremova St, 25, 49000 Dnipro, Ukraine

Abstract. In today's conditions of sustainable development of the national economy, the issue of innovative development of the agricultural sector is of particular relevance. The article discusses the key aspects of the methodology of forming an innovative model of the agricultural sector and offers recommendations for implementing these approaches in practice. The purpose of this research article is to analyse the methodological foundations of forming an innovative model for the development of the agricultural sector of the national economy.The authors emphasize the importance of taking into account the specifics of the agricultural sector when developing innovative strategies and models. The creation of a methodological framework for the formation of a model of innovative agricultural development in the national economy based on the experience of Brazil, China, Ukraine, the United States and the European Union may be useful for the development of Ukraine's agricultural sector.The results of the study may be useful for scientists, researchers, agricultural entrepreneurs and government agencies interested in the issues of innovative development of agriculture and ensuring sustainable development of the national economy. The study of the methodological foundations of the formation of an innovative model of agriculture remains an urgent task in the context of sustainable development of the national economy, and has the potential to solve important economic and environmental problems.

1 The need for innovative development of agriculture

The modern world is facing unprecedented challenges and opportunities related to the development of the agricultural sector of the national economy. Agriculture is undoubtedly

* Corresponding author: halatyr@i.ua

a strategically important industry that ensures food security, creates jobs and influences the socio-economic development of the country as a whole.

The urgency of the problem of creating an innovative model for the development of the agricultural sector is extremely important in today's environment. The industry is under increasing pressure due to climate change, population growth and growing demand for agricultural products. In addition, global challenges such as water scarcity and environmental pollution require new approaches to agricultural production. The methodological foundations for the development of an innovative model of the agricultural sector are becoming key to addressing these challenges. Research in this area is aimed at developing effective strategies and tools that will contribute to the modernisation of agriculture, increase its competitiveness and resilience to external factors.

This research article is devoted to the study of methodological approaches to the formation of an innovative model for the development of the agricultural sector of the national economy. The results of the study will contribute to the understanding of the main theoretical and practical aspects of this problem and can serve as a basis for further research and policy development in the field of agriculture. The scientific relevance of this paper lies in its contribution to expanding knowledge about the possibilities and limitations of innovation in agriculture and to promoting more sustainable, productive and efficient development of this important sector of the national economy.

An important aspect of this work is the consideration of innovative practices and experience of developed countries in the field of agriculture. The application of these approaches can help to adapt the best international practices to the specific conditions of the Ukrainian agricultural market. It is important to note that the success of agriculture is directly related to food security and the stability of the country's economy. Therefore, the development of an effective innovation model for the agricultural sector is an urgent task that requires attention and scientific substantiation.

The purpose of this research article is to analyse the methodological foundations of forming an innovative model for the development of the agricultural sector of the national economy. The research is aimed at studying and identifying the key aspects and approaches to introducing innovations into the agricultural sector in order to increase its competitiveness, sustainability and impact on the country's socio-economic development.

Objectives of the study:

- To study the current state of innovative development of the agricultural sector in Ukraine and compare it with the best international practices.
- To analyse promising areas of innovative development of the agricultural sector, including the use of modern technologies, product quality improvement and agribusiness development.
- To propose specific recommendations for improving the innovative development of the agricultural sector of Ukraine in order to ensure sustainable economic growth and improve the living standards of the population.

The methodological approach of the research in this scientific article is aimed at a thorough study and analysis of the process of formation of an innovative model in the agricultural sector using systemic and interdisciplinary approaches. This approach involves the following key research stages:

- Theoretical analysis: The research process begins with an in-depth analysis of scientific works that study the concepts of innovation, the agricultural sector and their interconnection. This stage allows us to identify current approaches and concepts related to the topic.
- System analysis: The use of a systems approach to study the interrelationships and interactions of the elements of the agricultural sector that are subject to innovation. This stage allows us to consider the agricultural sector as a complex system with specific properties and interrelationships.

- Interdisciplinary approach: Taking into account the interdisciplinary aspects that influence the innovative development of the agricultural sector. This includes economic, social, environmental and technical aspects that may play a key role in shaping the innovation model.
- Comparative analysis: Comparison of innovative practices in the Ukrainian agricultural sector with the experience of other countries and regions. This stage helps to identify best practices and development prospects.
- Development of innovative recommendations: Based on the data and analysis, the development of specific recommendations and proposals for further development of the innovation potential of the agricultural sector.

The methodological approach described in this article allows for a comprehensive study of the innovative development of the agricultural sector and identifies ways to further improve it to ensure sustainable economic development of the national economy.

2 Literature review

The study of innovations in agriculture is a relevant topic in today's world, where the requirements for productivity, quality and sustainability of agricultural production have been increasing. This literature offers important insights into innovation in different countries, including the United States, China, Brazil, and Ukraine. The literature identifies several key aspects of innovation in agriculture. The use of new technologies: researchers (Brown, 2023; Swinton and Lowenberg-DeBoer, 2019) focus on the role of modern technologies, such as digital technologies and precision agriculture, in increasing the efficiency and profitability of agricultural enterprises.

Agroecological approaches. One of the important trends observed in the literature (Costa, 2023; Silva, 2023) is the development of agroecological approaches to agriculture that promote sustainable production and conservation of natural resources. International cooperation. Studies (Müller and Rodríguez, 2023; Zhang, 2019) emphasise the importance of international cooperation and exchange of experience in agricultural innovation between different countries. State support. Some authors (Petrov, 2020; European Commission, 2021) draw attention to the role of government policies and programmes in promoting innovation in agriculture. Organisational aspects of innovation. Studies (Müller and García, 2023; Müller and López, 2023) also consider cooperation strategies and innovation models in agriculture.

Thus, based on these literature sources, it can be concluded that innovation is a key factor in the development of agriculture in different countries of the world. They include the use of new technologies, agroecological approaches, cooperation and government support. International exchange of experience and cooperation also play an important role in agricultural development and innovation. However, the unresolved parts of the problem include analysing and comparing innovative approaches and strategies in agriculture in different countries, such as the United States, China, Brazil and the European Union, in order to identify the most effective practices and opportunities for Ukraine. In addition, it is important to study the role of government policies and financing mechanisms in promoting innovative development of the Ukrainian agricultural sector in order to determine the optimal methodological approach to create an innovative model adapted to national conditions.

3 Formation of an innovative model in agriculture: theoretical aspects and international experience.

The formation of an innovation model in the agricultural sector is an important task for increasing the efficiency of agricultural production and ensuring the sustainable development of the industry. Innovations in agriculture include the introduction of new technologies, production methods, plant varieties and animal breeds, as well as improved management practices and marketing. They are aimed at increasing productivity, reducing costs and improving product quality.

The innovation model in the agricultural sector includes the following components: research and development; implementation of innovations; effective management practices; human capital development; marketing and sales of innovative products; the role of the state and support for innovation; cooperation and unification of the industry; consideration of regional specifics; and evaluation of the effectiveness of innovations. In general, the formation of an innovative model in the agricultural sector requires an integrated approach, cooperation of all stakeholders and support from the state to achieve sustainable development and competitiveness of agricultural production.

For a more detailed study of the methodological foundations of the formation of an innovative model of the agricultural sector of the national economy, several countries, including Ukraine, are considered, with the following justification of the choice:

1. Ukraine. As this topic is directly related to the national agricultural sector of Ukraine, as well as to its economic and social sphere, the study of innovations in Ukrainian agriculture will be interesting and important for understanding domestic challenges and opportunities.
2. United States of America. The United States is renowned for its leading role in agricultural innovation and has an extensive system of research and development in the agricultural sector. Studying US approaches to innovation can provide important insights for other countries.
3. Brazil is one of the leading countries in agricultural production and has a developed agricultural research system. Brazil's experience in agricultural innovation can serve as a valuable example for other countries with similar agricultural decisions.
4 China is another major country where agriculture is of great importance. China is actively investing in agricultural innovation and introducing new methods and technologies. Learning from China's experience can help to understand how innovation can contribute to the development of the agricultural sector.
5. European Union. The EU is an important player in agriculture and has numerous programmes and initiatives to support innovation in agriculture. Studying EU approaches can provide information on how integrated approaches can promote innovation in agriculture.

By selecting these countries for analysis, it is possible to obtain diverse information about approaches to agricultural innovation on different continents and to understand which methodological frameworks can be applied to the formation of an innovative model of the agricultural sector of the national economy of Ukraine. So, let us consider the theoretical aspects of this process and compare them on the example of these countries.

Ukraine has a great potential in agriculture, but the innovative development of the sector is limited by the low level of investment in research and development. To develop an innovative model, Ukraine needs to intensify cooperation between government agencies, business and academia. The United States is a leader in innovation in the agricultural sector due to its significant investment in research and development and the creation of a favourable environment for entrepreneurship. This model is based on the private sector and a flexible response to change. Brazil has a high level of agricultural production, but innovation development is limited by problems in the efficient use of resources and environmental issues. The formation of an innovative model requires increased investment in technology and sustainability. China is actively investing in agriculture and developing its own innovative technologies, such as the use of artificial intelligence and modern agricultural machinery. China's innovation model is based on a combination of state support and private

entrepreneurship. The European Union promotes innovation in agriculture through financial support, regulation, and the creation of common standards. The EU's innovation model is focused on ensuring sustainability and product quality.

There are several advantages of including these countries in the analysis:

1. Comparison of different approaches. A study of agricultural innovation in different countries will allow for a comparison of different approaches and strategies. This can help identify best practices and understand which methodologies are most effective.
2. Taking into account differences in contexts. When analysing innovative approaches in different countries, the researcher can take into account differences in economic, environmental, cultural and geographical contexts. This will help to create more adapted and effective innovation models for Ukrainian agriculture.
3. Taking into account differences in resources. Different countries have different access to resources such as finance, technology, land and labour. A study that includes countries with different resources can provide insights on how to optimise innovation approaches in resource-limited environments.
4. Consideration of environmental challenges. Agriculture also faces environmental challenges such as pollution and climate change. Country studies can reveal how innovation contributes to environmental conservation and sustainable development.
5. Strengthening Ukraine's position on the global market. An enriched analysis of innovation in agriculture can help Ukraine to increase its competitiveness on the global agricultural market. The creation of innovative models can help producers to obtain higher quality products and increase their value internationally.

The final step would be to create a national strategy for innovative agricultural development. This strategy should define objectives, priorities, timelines and resources for innovation initiatives, which will help to focus efforts on achieving specific goals. Table 1 shows the innovation potential of the agricultural sector in Ukraine, the US, China, Brazil and the European Union.

Table 1. Analysis of the innovation potential of the agricultural sector

Country	Innovation potential	Advantages	Disadvantages
Ukraine	Medium	- Large land area - Fertile soils - Potential for organic agriculture	- Insufficient investment in research and development - Lack of modern technologies - Corruption in agriculture
USA	High	- High level of investment in research and development - High level of technological development	- Environmental impact due to intensive agricultural activities; - Problems with access to land
China	High	- Large labour force - Growing market - Investments in modern technologies	- Environmental pollution - Congestion in agricultural regions - Land ownership issues
Brazil	High	- Large land area - High soil productivity - Export of agricultural products	- Destruction of ecosystems - Social conflicts due to unequal access to land - Weaknesses in agricultural governance
European Union	High	- Large number of research institutions - Modern technologies and infrastructure	- High expenditures on subsidies to the agricultural sector - Limited land area for development

		- Support from the government for agricultural development	- Complexity of bureaucratic procedures for obtaining permits

This table provides a general overview of the innovation potential and specific strengths and weaknesses of agricultural sectors in different countries. It should be borne in mind that this information may change over time, as agriculture is a dynamic industry and is affected by many factors, including policy, technological development and environmental issues. Given these dynamics and the specificities of each country, it is important to note that the innovation potential of the agricultural sector is critical to achieving sustainable development and food security.

4 Innovative models in agriculture: experience of Brazil, China, the USA, Ukraine and the European Union

So, Ukraine has great potential due to its fertile soil and land resources, but more investment in research and development and the fight against corruption are needed to achieve a high level of innovation. The United States has great innovation potential and a high level of technological development, but its intensive agricultural activities can have a negative impact on the environment. China has an impressive market and growing innovation potential, but it also faces problems of environmental pollution and access to land. Brazil has a large land area and high productivity, but ecosystem destruction and social conflicts are serious challenges. The European Union invests in research and innovation and supports sustainable agriculture, but the cost of subsidies can be a budgetary challenge.

Consequently, each country has its own unique strengths and weaknesses in the agricultural sector. To maximise the innovation potential and address the shortcomings, each country should actively cooperate with research institutions, support new technologies and production, and take into account the impact on the environment and society. This will help to create a sustainable environment for the agricultural sector and ensure sustainable growth in productivity and efficiency.

Table 2 shows the different methods and approaches to creating an innovative model of the agricultural sector in the countries studied: Ukraine, the United States, China, Brazil, and the European Union.

Table 2. Methods and approaches to developing an innovation model

Country	Methods	Approaches
Ukraine	Technological development	Development of the agricultural sector through the introduction of new technologies and modern management methods.
USA	Investment in research and development	Focusing on investments in research and development of the latest agricultural technologies, as well as support for agricultural start-ups.
China	Scale-Up	Leveraging large resources and large-scale projects to achieve efficiency and ensure food security.
Brazil	Systemic modernisation	Implementation of a comprehensive modernisation of the agricultural sector, including land reform and support for small farmers.
EU	Standards and support	Setting high standards for product quality and safety, and providing financial support for agriculture and rural development.

Table 2 provides an overview of the approaches and strategies used in different countries to develop an innovative agricultural sector. Each country has its own unique characteristics and priorities in this regard, but they all strive to increase agricultural productivity and sustainability through innovation.

Table 3 analyses the main indicators of agricultural development in the countries under study for 2012-2022.

Table 3. Key indicators of agricultural development in the countries under study, on average, for 2012-2022

Indicator	Brazil	China	Ukraine	United States	European Union
Agricultural land (% of land area)	28.29	55.69	71.48	44.27	41.26
Agricultural raw materials exports (% of merchandise exports)	4.77	0.41	1.73	2.22	1.47
Agricultural raw materials imports (% of merchandise imports)	1.07	3.42	1.06	0.99	1.45
Agriculture, value added (% of GDP)	5.04	7.91	9.83	0.93	1.66
Arable land (% of land area)	6.63	12.01	56.62	17.15	24.94
Cereal production (metric tons)	106263276	596850207	65059900	435543899	288352199
Cereal yield (kg per hectare)	4830.57	6074.67	4426.12	7779.23	5369.85
Employment in agriculture (% of total employment)	9.93	27.84	15.27	1.71	4.81
Fertilizer consumption (% of fertilizer production)	582.21	90.74	152.80	116.63	90.16

Source: compiled by the authors based on the World Bank data

Thus, Table 3 provides information on the main indicators of agricultural development in the five countries under study (Brazil, China, Ukraine, the United States, and the European Union) for the period from 2012 to 2022. First, the area of agricultural land: Ukraine has the highest indicator among all the countries studied with 71.48%. China and the European Union also have significantly high rates, 55.69% and 41.26% respectively. This reflects the important role of agriculture in these regions. Exports of agricultural inputs: Brazil has the highest percentage of agricultural inputs exports among the countries studied at 4.77%. China's figure is much lower at 0.41%, which may indicate a greater diversification of export sectors. Imports of agricultural raw materials: China has the highest percentage of agricultural inputs imports among the countries surveyed at 3.42%. Ukraine and the European Union also have significant shares, at 1.06% and 1.45% respectively.

Agricultural value added (% of GDP): Ukraine has a high value of 9.83%, which indicates a significant contribution of agriculture to gross domestic product. The United States has the

lowest figure at 0.93%. Area under cultivation (% of total land area): China has the highest figure at 56.62%. Ukraine also has a large area of cultivated land, at 56.62%. Grain production: China has the highest production of any country, with 596,850,207 tonnes. Ukraine ranks third, producing 65,059,900 tonnes. Grain yield (kg per hectare): The United States has the highest grain yield at 7779.23 kg per hectare. China also has a high yield of 6074.67 kg per hectare. Employment in agriculture (% of total employment): China has the highest rate at 27.84%. The United States has the lowest rate at 1.71%. Fertiliser consumption (% of fertiliser production): Brazil has the highest rate at 582.21%, which may indicate an intensive use of fertilisers in agriculture.

Overall, Table 3 shows the diversity of agriculture and its important contribution to the economic development of different countries, as well as the variations in input consumption and agricultural exports and imports in the regions studied. The conclusions from these data can serve as a basis for formulating methodological approaches to innovative agricultural development in national economies, taking into account various factors such as land resources, production efficiency and employment.

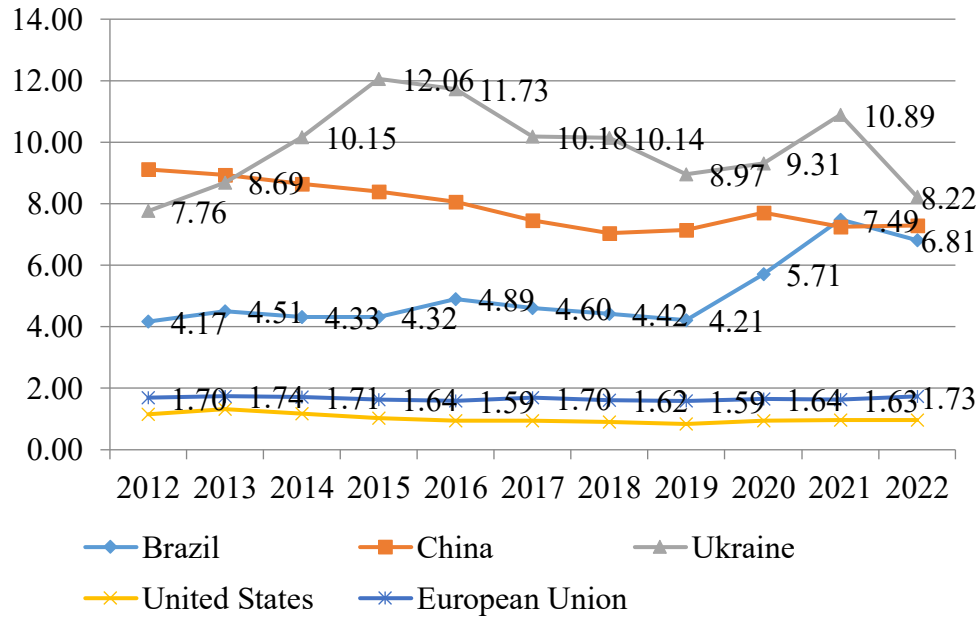

Fig. 1. Agriculture dynamics, value added (% of GDP) Source: compiled by the authors based on the World Bank data

An analysis of Figure 1 shows the dynamics of agricultural value added as a share of GDP for five different countries (Brazil, China, Ukraine, the United States and the European Union) between 2012 and 2022. In 2012, Brazil's agricultural value added was 4.17% of GDP. Over the following years, it fluctuated but grew, reaching a peak in 2021 at 7.49% of GDP, but declining to 6.81% in 2022.

China also has a large share of agricultural value added in its GDP. From 2012 to 2016, it was falling, but then stabilised and increased to 7.30% in 2022. Ukraine is marked by significant fluctuations in this indicator. In 2012, it was 7.76%, which increased to 12.06% in 2015, but then decreased again to 8.22% in 2022. The United States has the lowest share of value added in agriculture among the countries considered. It declined from 2012 to 2018, but then stabilised at around 0.96% of GDP. The share of value added in agriculture in the

European Union's GDP is also stable, ranging from 1.59% to 1.74% of GDP over the period under review.

In general, it can be noted that Brazil and China have a significant share of value added in these sectors in their GDP and have been growing over the years, while Ukraine has more fluctuations, the United States has a low level, and the European Union has been stable.

Table 4 shows the economic development indicators of the countries under study.

Table 4. Indicators of economic development of countries

Indicator	Brazil	China	Ukraine	United States	European Union
Bank capital to assets ratio (%)	9,02	5,28	7,91	9,08	
Commercial bank branches (per 100,000 adults)	19,56	8,47	0,59	31,61	25,38
Current account balance (% of GDP)	-2,95	1,73	-1,88	-2,49	0,00
Foreign direct investment, net inflows (% of GDP)	3,58	1,93	2,45	1,71	2,99
Foreign direct investment, net outflows (% of GDP)	0,66	1,11	0,23	1,53	3,75
Inflation, GDP deflator (annual %)	7,04	2,11	18,12	2,40	2,07

Source: compiled by the authors based on the World Bank data

The analysis of the economic development indicators of the countries studied in Table 4 shows that the ratio of bank capital to assets in all the countries under consideration is relatively stable. Brazil and the United States have a similar ratio, which indicates the resilience of the banking system. The number of commercial bank branches per 100,000 adults shows the difference in the development of banking infrastructure. The United States has the highest rate, which may contribute to greater financial inclusion. The current account balance as a percentage of GDP indicates the foreign economic position of countries. China has a positive balance, which indicates an active foreign trade balance, while Ukraine has a negative balance, which may require attention in managing foreign trade. Net foreign direct investment indicators refer to the level of foreign investment. Brazil has a high level of FDI, which may be favourable for economic development. The inflation rate shows that Ukraine has the highest inflation rate among the countries considered, which may affect macroeconomic stability. The general trend is the difference in economic development and foreign economic performance of the countries under study. These data can be useful in considering methodological aspects of the formation of an innovative agricultural model of the national economy and can serve as a basis for further research in this area.

Table 5 shows the innovative practices in the agricultural sector of the countries under study: Brazil, China, Ukraine, the US and the EU.

Table 5. Innovative practices in agriculture in the studied countries

Country	Innovative practices
Brazil	1. Use of modern plant varieties and hybrids.
	2. Introduction of genetic modification system.
	3. Automation and robotisation of processes in agriculture.
	4. Use of geoinformation technologies for field management and crop monitoring.
China	1. Development of new plant varieties with high yields.

	2. Using artificial intelligence to predict agro-climatic conditions and regulate production.
	3. Application of modern methods of soil cultivation and irrigation.
	4. Support programmes for farmers and start-ups in the agricultural sector.
Ukraine	1. Development and introduction of highly productive hybrids and varieties of crops.
	2. Use of drones and satellite systems to monitor the condition of fields and crops.
	3. Improving the quality and safety of products through modern processing and storage technologies.
	4. Attracting investments in the development of agricultural infrastructure and innovative projects.
USA	1. High-tech equipment for agricultural production.
	2. Application of genetic engineering methods to create modified crops.
	3. Development of digital farming and data analytics for farm management.
	4. Programmes to support research and development of new agricultural technologies.
European Union	1. Introduce modern methods of organic and sustainable agriculture.
	2. Reducing the use of chemical pesticides and fertilisers through biological control methods.
	3. Development of agritourism and support for small family farms.
	4. Financing research in the field of agroecology and sustainable production.

Table 5 provides a general overview of agricultural innovation practices in different countries. However, these practices may change over time and vary according to specific regional conditions and resources. Table 6 provides recommendations for developing the innovation potential of the agricultural sector by country: Brazil, China, the United States, Ukraine and the European Union.

Table 6. Recommendations for developing the innovation potential of the agricultural sector for the studied countries

Country	**Practical recommendations for developing the innovation potential of the agricultural sector**	**Proposals for implementing innovations in agriculture**
Brazil	1. Develop programmes to support research and development in agriculture.	1. Encourage farmers to use modern agricultural technologies.
	2. Promote the creation of innovative cooperatives to unite farms.	2. Providing access to financial resources for the introduction of new technologies.
USA	1. Development of infrastructure for data collection and processing in the agricultural sector.	1. Create support programmes for start-ups specialising in agricultural innovation.
	2. Creation of innovation centres and technology parks for agricultural companies.	2. Support for research projects in the field of agricultural biotechnology.

China	1. Increase investment in research and introduction of new crop varieties.	1. Implementation of modern information technology systems in agriculture.
	2. Development of public-private partnerships for joint innovation projects.	2. Support for training of rural residents in modern agricultural methods.
Ukraine	1. Support for young agricultural entrepreneurs and start-ups in agriculture.	1. Holding agro-innovation conferences and fairs to exchange experience.
	2. Introduce modern methods of product quality control and farm efficiency.	2. Ensure access to credit resources for innovative agricultural projects.
EU	1. Establish financial support programmes for agricultural research and innovation..	1. Implementation of environmental safety and sustainable development standards in the agricultural sector.
	2. Development of a network of research centres and laboratories for agricultural innovations	2. Support for projects on efficient use of land resources and water systems.

Table 6 contains practical recommendations for developing the innovation potential of the agricultural sector in the selected countries, as well as suggestions for implementing innovations in agriculture. All these practical recommendations and proposals are aimed at promoting the development of the innovation potential of the agricultural sector in each of the countries under consideration, as well as at increasing agricultural efficiency and creating sustainable and competitive agricultural industries.

The creation of a methodological framework for the formation of a model of innovative agricultural development in the national economy based on the experience of Brazil, China, Ukraine, the United States and the European Union may be useful for the development of Ukraine's agricultural sector. Here are some methodological approaches that could be considered:

1. It is important to analyse best practices; study the experience of countries that are leaders in agriculture, such as Brazil, China, the United States and the EU; evaluate their strategies for innovative development and transfer best practices to Ukrainian agriculture.
2. Adaptation and contextual awareness are needed; taking into account the unique characteristics of Ukrainian agriculture, such as climatic conditions, land relations, agricultural production traditions and market competition.
3. Stakeholder engagement. Partnership with all stakeholders, including government agencies, agricultural enterprises, research institutes, NGOs and international partners to jointly identify priorities for innovation development.
4. Creation of innovation infrastructure. Development of infrastructure to support innovation in agriculture, including research, technology parks, education and support for enterprises developing new technologies.
5. Financial support. Create mechanisms for financing innovative projects in agriculture, including grants, loans and investments.
6. Continuous monitoring and evaluation. Establish a system of monitoring and evaluation of the results of innovative projects for continuous improvement of development strategies.
7. Legislative support. Develop and implement appropriate legislation that promotes innovation in agriculture and protects the rights of innovators.

Taking into account these methodological approaches and adapting them to the specifics of Ukrainian agriculture can help create an effective model of innovative development that will increase the competitiveness of agriculture and promote sustainable economic growth.

In general, the assessment of the experience of Brazil, China, the US and the EU points to the need to consider a comprehensive strategy for the innovative development of Ukrainian agriculture. This strategy should include
- use of modern technologies, such as agricultural robots, monitoring and data analysis systems;
- focus on sustainable development and environmental protection;
- development of research infrastructure and support for innovative agricultural start-ups;
- strengthening cooperation between agriculture and business to share best practices and innovations.

However, each country has its own unique conditions and requirements for agriculture, so the development strategy should be adapted to Ukraine's specific needs and opportunities.

5 Conclusions and prospects for further research

The article considers the methodological foundations for the formation of an innovation model in agriculture of the national economy. They include an analysis of the current state of the industry, identification of the potential for innovation and development of specific strategies. The study has shown that innovations in agriculture have great potential to increase the productivity and competitiveness of the sector. However, their successful implementation requires systematic work at different levels of government and cooperation between all stakeholders. An important element of the innovation model is government support through the development of the research and development base, financial support and the creation of a favourable legal environment for innovative projects. The regional aspect also plays an important role in shaping the innovation model of agriculture. The development of innovations should take into account the specifics of different regions and their needs. The study has shown that innovations can contribute to sustainable agricultural development, reduce environmental impact and improve the quality of life of the population.

Prospects for further research are studying the impact of climate change on agriculture and the possibility of using innovations to adapt to these changes.

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